

May 16, 2003

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Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street S.W.
Room TW-204B
Washington, DC 20554

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MAY 16 2003

Federal Communications Commission
Office of Secretary

RE: Reply Comments of Metropolitan Area Networks, Inc.
ET Docket No. 02-380

Enclosed herewith are an original and eleven copies of the Reply Comments of Metropolitan Area Networks, Inc., in the above-referenced inquiry proceeding.

Should any questions arise in connection with this matter, please communicate directly with the undersigned.

Very truly yours,



Barry D. Umansky
Counsel for Metropolitan Area Networks, Inc.

Enclosure

cc: Mr. William Chastain, Metropolitan Area Networks, Inc.

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Before the
Federal Communications Commission
Washington, D.C. 20554

MAY 16 2003

Federal Communications Commission
Office of Secretary

In the Matter of)
)
Additional Spectrum for Unlicensed Devices) ET Docket No. 02-380
Below 900 MHz and in the 3 GHz Band)

To: The Commission

REPLY COMMENTS OF METROPOLITAN AREA NETWORKS, INC.

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May 16, 2003

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SUMMARY

Metropolitan Area Networks, Inc. (“MAN”), a technology company providing broadcasters with infrastructure to utilize efficiently their spectrum resources to deliver enhanced programming, interactivity, station support data services, high-speed internet, and other digital media services, offers a proposal that will allow the bands currently allocated for television broadcasting to be used in new and productive ways. These new uses will help maximize the service potential of these bands and their operation in the public interest.

MAN urges the Commission to issue a *Notice of Proposed Rule Making* that abandons the concept of allowing unlicensed facilities to occupy portions of the television broadcast bands and, instead, opens up the unused portions of these bands for interactive and “return-communications” activities, along with certain wireless broadband services, to be operated by television station licensees, as part of their own *licensed* operations on these frequencies.

Based on the record thus far established in this inquiry proceeding, it is abundantly clear that “third party,” unlicensed operation on the TV broadcast bands is so fraught with perils that its further consideration – at least at this time – would be at odds with all notions of rational communications, particularly as this nation’s over-the-air television system is being converted to digital technology. Although relative success might have been achieved by unlicensed operations on other portions of the radiofrequency spectrum, the considerations are far different where television broadcast band use might be considered. Interactive television broadcasting and other activities conducted by station licensees over unused portions of the broadcast spectrum will employ that spectrum efficiently, and in a fashion that will not create new interference to existing and future broadcast operations.

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
Additional Spectrum for Unlicensed Devices)	ET Docket No. 02-380
Below 900 MHz and in the 3 GHz Band)	

REPLY COMMENTS OF METROPOLITAN AREA NETWORKS, INC

I. INTRODUCTION AND SUMMARY

Metropolitan Area Networks, Inc. (“MAN”), by its attorneys, submits these reply comments in the above-captioned inquiry inaugurated by the Commission late last year.¹ In this proceeding, the Commission seeks initial comment on a set of proposals to allow “unlicensed devices” to operate on certain frequency bands now available only to licensed parties. Among the bands being considered by the Commission for such unlicensed operations are the bands 54-72 MHz, 76-88 MHz, 174-216 MHz and 470-806 MHz, each currently used for over-the-air television broadcasting.

MAN is a technology company that provides broadcasters the infrastructure to utilize efficiently their spectrum resources so as to deliver enhanced programming, interactivity, station support data services, high-speed internet, and other digital media services to residential, institutional and business users. In these reply comments, MAN offers a proposal that will allow the bands currently allocated for television broadcasting to be used in new and productive ways – ways that

¹ *Notice of Inquiry* (“*Notice*”) in ET Docket No. 02-380, FCC 02-328, released December 20, 2002.

will help maximize the service potential of these bands and their operation in the public interest. Significantly, however, the MAN proposal responds to the chief concern of parties filing initial comments and expressing reservations over the Commission's plan to allow unlicensed operations to infiltrate the bands used by over-the-air television broadcasters.

Specifically, MAN urges the Commission to issue a *Notice of Proposed Rule Making* that abandons the concept of allowing unlicensed facilities to occupy portions of the television broadcast bands and, instead, opens up the unused portions of these bands for interactive and "return-communications" activities, along with certain wireless broadband services, to be operated by television station licensees, as part of their own *licensed* operations on these frequencies.

MAN believes that enlisting the local television licensees in development of the spectrum allocated to their use is both the "best and highest" use, as well as a means of returning continuing revenue to the Federal Government. The FCC's requirement for licensees to operate their channels in the best interests of public should be modified to include management of the spectrum in their market in the public interest. As noted below, licensed users of this spectrum are required to return to the federal government 5% of revenues derived from its use for ancillary services. With this revenue reporting requirement and collection mechanism in place, these free market enterprises of licensed broadcasters will result in spectrum being used for applications serving the public interest, while also generating revenues for the federal government.

Thus a system of checks and balances is achieved. With mandated legacy services to protect, the broadcasters in a particular market would be unwise to overly exploit the available spectrum. In any case, a broad division of spectrum management between the FCC and the local broadcaster group should be drawn with the proposed dividing line to be at 100 watts ERP.

Above 100 watts, a federally-obtained license would be required. Applications below 100 watts ERP would require a local broadcaster as sponsor, and with approval by the local coordinating body.

II. THE RECORD OF THE PROCEEDING REFLECTS WIDESPREAD CONCERN OVER THE POTENTIAL FOR INTERFERENCE TO TELEVISION BROADCAST AND OTHER COMMUNICATIONS SERVICES FROM THE OPERATION OF UNLICENSED DEVICES.

The Commission's *Notice*, insofar as it addresses unlicensed operations on the television broadcast bands, is based on two fundamental premises: (1) that the bands are underutilized, as compared to certain other frequency bands²; and (2) that the Commission's rules for unlicensed transmitters have been a "tremendous success."³ These observations also have been made in an FCC Spectrum Task Force Report⁴ and by certain of the participants in a "public workshop" discussion held before the Spectrum Task Force on August 1, 2002.

However, many of the persuasive comments filed in the instant proceeding have urged great caution if the FCC were to allow any unlicensed operations on the broadcast bands. Indeed, this caution largely amounts to opposition to the Commission's proposals.

For example, the comments filed jointly by the Association for Maximum Service Television, Inc., the National Association of Broadcasters and the Association of Public Television Stations ("Broadcast Associations' Comments") have urged the Commission not to allow unlicensed devices to operate in the TV bands at all, particularly during the ongoing DTV transition.⁵ The Broadcast Associations' Comments noted that both NTSC and DTV receivers

² See *Notice* at ¶9.

³ *Id.*, at ¶6.

⁴ FCC Spectrum Policy Task Force Report in ET Docket No. 02-135, November 2002.

⁵ Broadcast Associations' Comments in ET Docket No. 02-380, filed April 17, 2003.

would be affected detrimentally by interference from any unlicensed devices, and that the effect on DTV receivers would be the most severe due to the likely complete loss of DTV service from such interference, as compared to simply an “impaired” picture on an analog receiver. Such harm to DTV reception, the Broadcast Associations observe, would undermine consumer confidence in DTV and cause great damage to the nascent digital transition process.

Though indicating that it supported the general concept of allowing “new and innovative unlicensed Part 15 devices,” the Consumer Electronics Association (“CEA”) also expressed similar concern over the potential harm to television reception from unlicensed devices.⁶ CEA underscores the fact that “sharing in the TV bands must be addressed carefully to ensure that unlicensed devices do not interfere with broadcast TV reception.”⁷ Moreover, and contrasting with the comments of several parties who support unlicensed operations in the TV bands,⁸ CEA observes that “successful unlicensed use on a non-interference basis has yet to be demonstrated...”⁹

Several other parties filing initial comments also oppose the concept of unlicensed operations in the TV broadcast bands. These comments range from complete opposition to the position that no such unlicensed operations should be contemplated until the completion of the digital transition by over-the-air broadcast stations and the American public. Significantly, these positions are being espoused not just by broadcasters but by many other non-broadcast users of the spectrum.

⁶ Comments of CEA in ET Docket No. 02-380, filed April 17, 2003, at 1.

⁷ *Id.*

⁸ *See, e.g.* Comments of Shared Spectrum Company in ET Docket No. 02-380, filed April 17, 2003.

⁹ Comments of CEA, *supra* note 6, at 7.

Further examples of broadcast commentators include Sinclair Broadcast Group, Inc. (“Sinclair”) and Cox Broadcasting, Inc. (“Cox”) Sinclair contends that the Commission’s proposal to authorize unlicensed transmitter in broadcast spectrum raises “substantial interference concerns” for consumers relying on over-the-air television reception. Sinclair goes on to recommend that the Commission refrain from considering new, unlicensed uses of TV broadcast spectrum until after consumers have replaced their current-generation receivers. Similarly, Sinclair urges the Commission to refrain from considering such future uses of TV broadcast spectrum until after it has adopted and implemented either mandatory performance standards for receivers or voluntary performance standards accompanied by a “meaningful labelling regime” for over-the-air DTV receivers.¹⁰

Cox, while suggesting that it is appropriate for the FCC to “begin considering” the concept of unlicensed devices, believes the Commission should refrain from permitting the actual introduction of unlicensed devices in the TV broadcast spectrum until after the close of the DTV transition.¹¹ Similar concern over interference is also held by a wide variety of non-broadcast parties filing initial comments.

The American Petroleum Institute (“API”), a trade association representing, among others, certain companies employing private land mobile radio services operating on the 470-512 MHz broadcast band in many markets, urges the Commission not to allow any new unlicensed operations in that band *unless* technological advances make possible the deployment of devices that can assure protection to its members and other authorized licensees in the band.¹² In like measure, Atlantic Telecommunications (“Atlantic”), which also operates two-way dispatch

¹⁰ Comments of Sinclair in ET Docket No. 02-380, filed April 17, 2003, at 4-10.

¹¹ Comments of Cox in ET Docket No. 02-380, filed April 17, 2003, at 1.

¹² Comments of API in ET Docket No. 02-380, filed April 17, 2003, at 4-5.

services over the 470-512 MHz band, urges the Commission not to proceed with its unlicensed transmitter proposals until it has been demonstrated that introducing these “opportunistic devices” into the 470-512 MHz band will not result in destructive interference to existing licensees.¹³

Data Flow Systems, Inc. (“DFS”) observes that both licensed and unlicensed operations have a “legitimate and appropriate place in the Commission’s regulatory regime.” However, DFS goes on to argue that, as a general proposition, secondary operations permitted in an allocation populated by licensed primary users should themselves be licensed. Indeed, API suggests that unlicensed operations should be reserved for frequency bands principally allocated for unlicensed use.¹⁴ DFS concludes that “...allowing unlicensed devices to operate in the TV broadcast spectrum and/or other bands inhabited by licensed users should be limited in the short-term and nonexistent in the long term,” with DFS basing its position on “economic and technical considerations.”¹⁵

The Land Mobile Communications Council (“LMCC”) has taken the position that the FCC should prohibit or restrict the operation of unlicensed devices in the TV spectrum as necessary to ensure the continued, interference-free service provided by land mobile facilities currently employing portions of those bands, on a shared basis, in eleven of the largest television markets in the country.¹⁶ LMCC believes “...there is no record of support for a Commission finding that unlicensed devices could operate in the [television] band without causing interference and substantial evidence that such a decision would be fatally premature.”¹⁷

¹³ Comments of Atlantic in ET Docket No. 02-380, filed April 17, 2003, at 1-3.

¹⁴ Comments of DFS in ET Docket No. 02-380, filed April 17, 2003, at 4.

¹⁵ *Id.*

¹⁶ Comments of LMCC in ET Docket No. 02-380, filed April 17, 2003, at 3.

¹⁷ *Id.*, at 8.

Such concerns over the potential for interference also are shared by members of the Commission's own staff. In a report, released May 14, 2003, and titled *Joint OET-OSP White Paper on Unlicensed Devices and the Associated Regulatory Issues ("FCC White Paper")*,¹⁸ co-authored by FCC staff from the Office of Strategic Planning and Policy Analysis and the Office of Engineering and Technology, there is a recognition that any further pursuit of the concept of unlicensed devices must address "the fundamental problem of interference."¹⁹ Moreover, and as explained below, portions of the *FCC White Paper* suggest regulatory alternatives very much along the lines of those advanced herein by MAN.

III. ALLOWING "THIRD PARTY" UNLICENSED OPERATION ON THE TELEVISION BROADCAST BANDS IS UNWISE COMMUNICATIONS POLICY, PARTICULARLY DURING THE CURRENT TRANSITION TO DIGITAL BROADCASTING.

Based on the record thus far established in this inquiry, it is abundantly clear that "third party," unlicensed operation on the TV broadcast bands is so fraught with perils that its further consideration – at least at this time – would be at odds with all notions of rational communications, particularly as this nation's over-the-air television system is being converted from analog to digital technology. Although relative success might have been achieved by unlicensed operations on other portions of the radiofrequency spectrum, the considerations are far different where television broadcast band use might be considered.

However, and as further discussed below, MAN believes the Commission could achieve its goal of more efficient and full utilization of the television broadcast bands were there to be

¹⁸ *FCC White Paper*, Carter, Kenneth R., Lahjouji, Ahmed and McNeil, Neal, OSP Working Paper Series, Ver. 1.0, released over FCC Office of Engineering and Technology web page, May 14, 2003.

¹⁹ *Id.*, at i.

additional, “broadcast program complementary” communications employed in the broadcast bands. MAN is confident that the Commission would be on solid policy, legal and engineering ground if it were to authorize various forms of “interactive” services and also forms of wireless broadband services, operated and controlled by the licensees whose overarching concern is with interference to analog and digital broadcast service, to be conducted over TV broadcast frequencies.

Indeed, the *FCC White Paper* goes on to suggest that “licensees [of spectrum wherein ‘unlicensed use’ might take place] could be allowed to charge an interested party, including unlicensed operators, an access charge for use of a portion of its allotted spectrum.”²⁰ This is precisely one of the components of the MAN proposal for diverse yet responsible use of the broadcast spectrum. As such, MAN is heartened regarding the FCC staff recognition that new, innovative and diverse services well may be offered through the auspices of licensed users of the spectrum, operating in a fashion governed responsibly by a frequency coordinator, rather than through the haphazard operation of myriad unlicensed facilities.

IV. INTERACTIVE TELEVISION BROADCASTING BY STATION LICENSEES WILL EFFICIENTLY EMPLOY UNUSED PORTIONS OF THE BROADCAST SPECTRUM WITHOUT CREATING NEW INTERFERENCE TO EXISTING AND FUTURE BROADCAST SERVICES ON THESE FREQUENCIES.

In its comments, the CEA observes that it is “...eager to explore the technical feasibility of services such as interactivity through a return path for broadcast stations...”²¹ CEA goes on to state that:

²⁰ *FCC White Paper*, *supra* note 18, at 48.

²¹ Comments of CEA, *supra* note 6, at 7.

Fostering new and innovative systems could further the goals of the Commission by enhancing the functionality of digital broadcast stations and thereby likely accelerate the transition to DTV. Consumers, broadcasters, and manufacturers all would benefit directly from the increased functionality...²²

MAN supports CEA's position and believes that the Commission, were it to inaugurate a rulemaking proceeding in this docket, should focus – nearly exclusively in its deliberations on additional communications uses on the television broadcast bands – on the adoption of interactive television rules that would foster these technologies, and in a fashion that would minimize the potential for interference to broadcast television service.

MAN has developed technologies, described further in Appendix A to these reply comments, that responsibly, efficiently and effectively employ the ancillary capacity of the digital TV broadcast spectrum. These technologies allow consumers access to high-speed and broadband internet access. These technologies also may be employed for “upstream,” return communications for broadcasters choosing to offer interactive services.

Pursuant to a Commission “special temporary authorization,” MAN has operated a highly successful and fully interactive DTV service.²³ This operation would be the prototype for an entire range of interactive and other services that broadcaster should be given the opportunity to offer and, thereby, further maximize the productive use of the television broadcast spectrum.

A hallmark of these MAN technologies is that they allow new and innovative services to co-exist with analog and digital broadcast service -- in large part because the entities providing these services are licensed television broadcasters who share a common interest in assuring non-

²² *Id.*

²³ See *Special Temporary Authorization for Metropolitan Area Networks, Inc. on Channels 16 and 27 at Las Vegas, Nevada*. Letter to Metropolitan Area Networks, Inc. from Barbara A. Kreisman, Chief, Video Services Division, Mass Media Bureau, FCC, dated May 9, 2000.

interference and have enjoyed a history of assuring analogous interference-free operations through frequency coordination among station licensees. Existing television broadcasters long have succeeded in assuring maximized use of the broadcast auxiliary spectrum (regulated under Part 74 of the Commission's Rules) through responsible frequency coordination. The same, MAN believes, will be the case where additional and productive use of the primary television broadcast spectrum is concerned.

Significantly, such use of stations' licensed digital television spectrum will provide fiscal benefits to the federal government, as well as service benefits for consumers. Pursuant to Section 73.624(g) of the Commission's Rules, stations employing their digital spectrum for ancillary or supplementary services, must pay a fee to the government at a rate of five percent of the gross revenues from these services. Thus, Commission adoption of the plan advanced by MAN not only would yield service benefits in the public interest, but also would result in new and likely substantial monetary payments to the United States Treasury.

It is recommended that the Commission adopt a maximum power level of 100 watts ERP digital (exclusive of broadcaster Grade B transmit power authority) and that this power level may be achieved both at the transmit hub (distribution cell) and at the response station (subscriber). Operations should be licensed for two-way services, whether or not there is a broadcast channel licensed and operating in the relevant geographic area. MAN also recommends that devices employed for these services use digital technology at 900 MHz and below.

V. THE COMMISSION SHOULD ADOPT A “FREQUENCY COORDINATION” SYSTEM – AND APPOINT A “FREQUENCY USE REFEREE” – TO ADMINISTER NEW AND INNOVATIVE OPERATIONS ON THE TELEVISION BROADCAST BANDS.

As set forth in Appendix A, MAN has developed technologies that not only allow more productive and innovative services over broadcast spectrum, but also afford a high degree of interference protection as well. To complement reliance on technologies aimed at achieving interference protection, MAN believes the Commission also should adopt a regulatory regime whereby a “frequency use referee” would be given the task – and the responsibility – of assuring coordinated use of the relevant spectrum, and further assuring non-interference to licensed television broadcasting.

Indeed, and based on expertise and experience with these matters of providing innovative services while avoiding interference, MAN believes that it is well-suited to play that “referee” or “frequency coordinator” role in markets where interactive and other new and productive services might be provided over television broadcast spectrum by broadcast licensees. Thus, MAN urges the Commission to consider the appointment of such a “referee” or “frequency coordinator” as one of the issues to be encompassed within the scope of the forthcoming *Notice of Proposed Rule Making* in this proceeding.

Significantly, the *FCC White Paper* suggests the appointment of such a spectrum coordinator as one recommended course for agency policy development and rule making. Though stated in the context of spectrum relocation and cleared bands, there is a recommendation that “...an FCC-appointed spectrum coordinator could develop a more complex spectrum sharing etiquette to ensure equitable access to the spectrum.”²⁴ MAN believes that

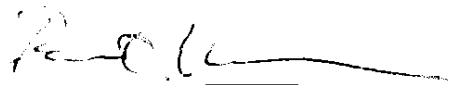
²⁴ *FCC White Paper*, *supra* note 18, at 48.

such a complex task well could be undertaken by it, as part of FCC implementation of the regulatory paradigm MAN has proposed in these reply comments.

VI. CONCLUSION

For the reasons stated in these reply comments, and consistent with fundamental notions of rational communications and spectrum policy, MAN urges the Commission to exempt the television broadcast bands from the introduction of future, unlicensed operations. Rather, MAN believes that the concepts it has advanced herein – for allowing licensed broadcasters' use of these bands for interactive and other wireless services – will achieve far more efficient and innovative use of this spectrum while optimally ensuring an interference-free environment for licensed broadcast stations and the audience they serve.

Respectfully submitted,



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May 16, 2003

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 METROPOLITAN AREA NETWORKS™



Metropolitan Area Networks™ Technology & Services

Metropolitan Area Networks' infrastructure, the earthLAN™ service (www.earthlan.com), is based on an architecture and platform that provides data services using the broadcast industry's digital television terrestrial (DTT) UHF allocation. *Metropolitan* facilitates the use of all allocated DTT spectrum as well as any other wired/wireless return paths to implement a seamless, IP-centric, two-way data service network (patent pending).

Metropolitan Area Networks, Inc. provides television broadcasters with the infrastructure to efficiently utilize their spectrum resources to deliver enhanced programming, station support data services, high-speed Internet, and other digital media services to residential, institutional and business users with low-entry costs and profitable results. The transition from NTSC to DTT allows for a more efficient use of the 6MHz TV channel resulting in unused digital bandwidth. At present, this ancillary and supplementary capacity can range from approximately 4 to 16Mbps depending on the compression ratio and transmission format of a station's primary DTT program.

Using a phased approach based upon the status of a station's current transition, *Metropolitan* is ready to help stations manage and operate their digital plant by providing infrastructure and technical support to maximize the efficient use of the digital capacity.

System Overview

The earthLAN™ service offers two-way functionality including a high-speed wireless modem system capable of offering data services at speeds up to 9 Mbps (per modem) to a multitude of subscribers. The architecture of our two-way system is unique to the industry and provides the platform for digital convergence to occur. Our service also provides seamless integration with other prevalent data networks currently serving metropolitan areas allowing an interoperable network communications system for all.

Our core architecture (Figure 1) consists of the **Common Transport System™ (CTS™)** controller (i.e. hub or router) and the **CESAR™** wireless subscriber modem. Transmissions from the hub to subscribers are downstream signals, while transmissions from the subscribers to the hub are upstream transmissions. The complete system includes a number of supporting components such as transmitters, antennas, etc.

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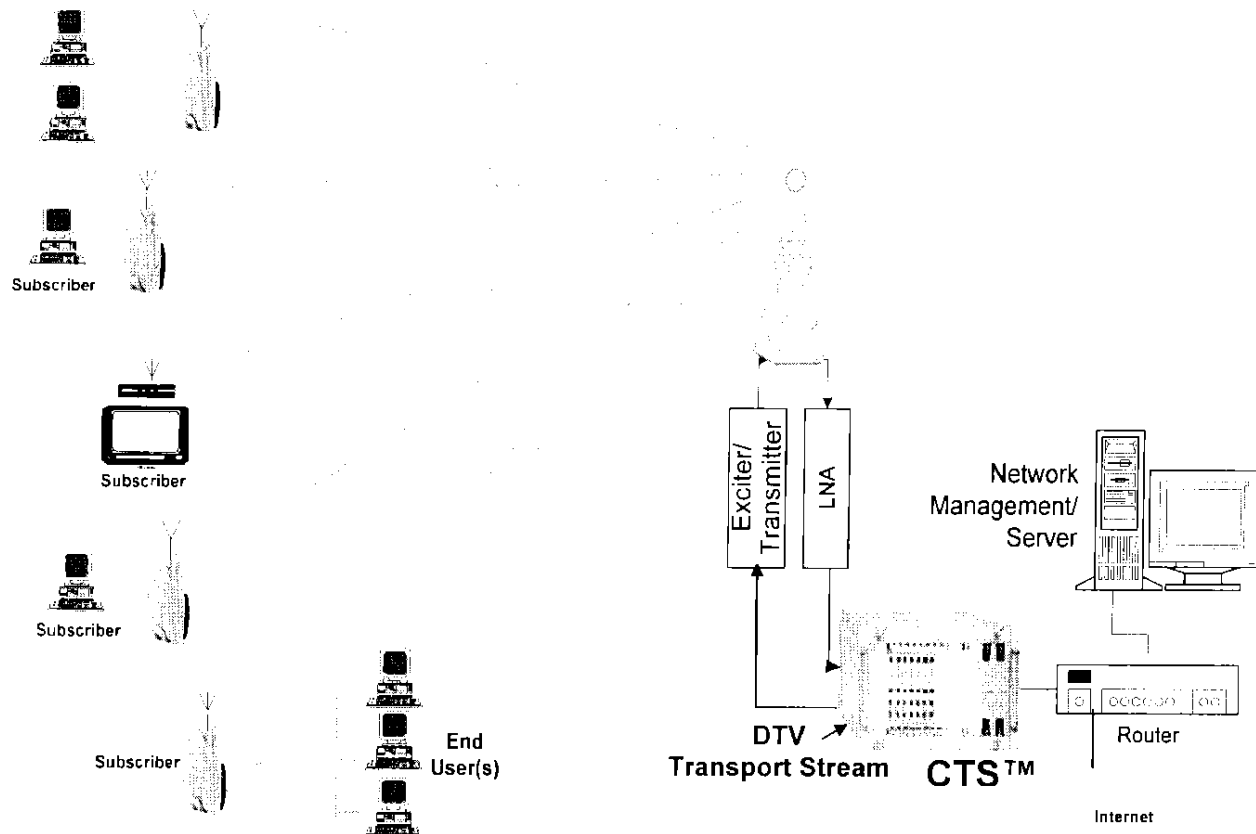


Figure 1 – Core System Architecture

Common Transport System™ (CTS™)

The CTS™ dynamically establishes and controls connectivity between the network backbone (i.e. Internet, VPN, convergence services) and the subscriber modems. The CTS™ is responsible for routing all data to and from the earthLAN™ user community. The data stream from the CTS™ is multiplexed in with the DTT transport stream. The resultant transport stream goes into the 8VSB exciter and transmitter and this downstream signal broadcasts out over the service area where DTT receivers decode their digital television programming and CESAR™



subscriber modems decode their data service. The upstream transmissions are received back at the broadcast facility via wireless or telephone links and end up back in the CTS™ to complete the two-way path. The CTS™ can also provide this same process through a DOCSIS™ digital cable system.

The CTS™ supports six RF modules (providing for station sectorization, upstream wireless link integration, etc.) and comes with dual power supplies. Each module may be either an Upstream Demodulator (receiver) or a Downstream Modulator (transmitter). The downstream modules are available in single or quad channel versions and the upstream modules are available in single or six channel configurations thus giving system flexibility and peace-of-mind redundancy. The redundancy built into the CTS™ insures that the DTT stream passes through with no interruption. Each channel may employ a different modulation scheme and utilize a different spectrum band.

In wireless return configurations, the upstream antenna signal passes through a bandpass filter to an LNA. The amplified signal feeds the upstream downconverter, which in turn feeds the CTS™. The CTS™ utilizes a 100baseT interface for connection to an IP switch/router, IBM-compatible computer running network management software (CTSNOS™), and the Internet.

CESAR™ Subscriber Unit (Wireless Two-Way Model)

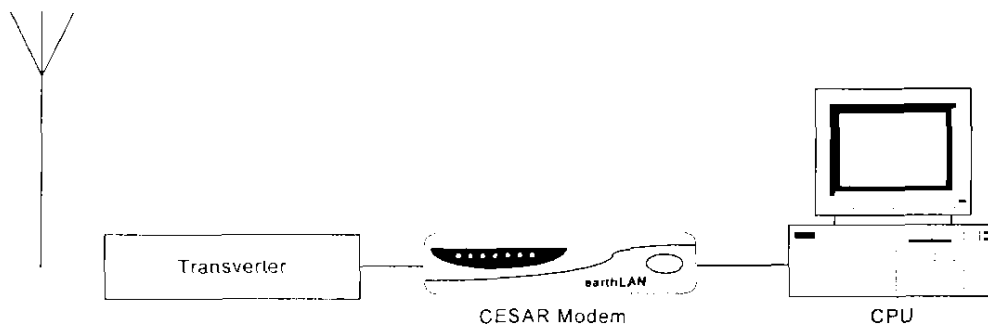


Figure 2 - Block Diagram of Subscriber Equipment

At the subscriber premises, signals are transmitted and received by a single antenna. This system includes a modem and transverter that handles downstream and upstream UHF signals going to and from the modem. A single run of coax cable connects the antenna, transverter, and modem. The subscriber unit provides high-speed data through a 100baseT port for high-speed Internet access, MPEG streaming video, LAN-LAN peering, video conferencing and telephony and other data services to the end user.



Station Support

One of the big advantages of adding the earthLAN™ service to the broadcast facility is the support it provides to station operations. For example, broadband data services such as the Internet can be provided to all remote news bureaus, LAN connections can be supplied to remote news vehicles to expedite delivery of stories back to the studio, telephone services and enhanced IFB communications can be made available, and tower facilities can have enhanced communications and remote control from anywhere via the Internet. Moreover, microwave costs can be reduced by replacing many of the microwave links with the earthLAN™ service. Dozens of remote cameras can be viewed and controlled for a fraction of the cost of just a few microwave-linked cameras.

System Management

The earthLAN™ Common Transport System™ controller is designed to be easily managed by offering straightforward provisioning, monitoring and remote operation while providing transparent data transmission. Multiple CTS™ controllers can be load balanced within a marketplace or from market-to-market using SNMP and specialized communications between controllers. CTS™ controllers can also be deployed within a marketplace to support frequency sectorization, cellularization and capacity sharing among multiple channels.

The CTS™ controller uses SNMP for network management. The management functions include configuration, fault, performance, and security. The entire network can be graphically displayed and status of each user device can be easily viewed. Performance monitoring with statistics can also be displayed. Software upgrades to the modems can be performed automatically. As the system grows, Metropolitan Area Networks™ can customize software to work more efficiently to meet growing needs. The earthLAN™ service also supports standard DOCSIS™ (with wireless enhancements) MIBs with private extensions, so management supports deployment into the digital cable plant as well.

Flexibility designed into the CTS™ includes an industry standard compact PCI chassis with an open physical architecture that supports multiple processors and supports a GR 63 compliance approach. These features allow future development in system control, functionality and management allowing a greater range of services to be offered.



Quality of Service

The earthLAN™ service offers straightforward data service control. Data rates can be governed to insure that specific data service needs are met. Traffic can be prioritized, so that a business subscriber requiring a high data rate (i.e. video conferencing) can be guaranteed uninterrupted service. This dynamic bandwidth allocation provides a more efficient use of bandwidth while providing satisfactory service levels to all users.

Other Services

The earthLAN™ service provides an open platform to allow application providers the opportunity to build on this flexible architecture. Services such as video on demand, voice over IP, cable integration, enhanced TV services, last 100ft wireless LAN integration, and other hardware and software API's are all on our roadmap.

System Configuration

Configuration for earthLAN™ head-end system* installed at an existing digital facility:

- Single Sector (Multiple Sector Operation Available)
- SMPTE 310 or LVDS (DVB-SPI) I/O
- SD Encoding
- Internet Connectivity Required

**Other configurations available on request.*